Amendments to the Specification

Paragraph beginning on page 1, line 29

One such communication system is the CEBus system that has been made an EIA standard, known as the EIA 600 standard, which was originally developed by Intellon Corp. A second well-known communications system is the LonWorks system, known as the EIA 709 standard, commercially available from and developed by Echelon Corp. Both the CEBus and LonWorks systems specify physical and link layer means for communicating over a variety of different media including power line carrier, coaxial cable, fiber optic cable, radio frequency (RF), infrared (IR) and twisted pair cable.

Paragraph beginning on page 2, line 23

An example of a network based on a shared communication media is shown in Figure 1. The network, generally referenced 10, comprises a plurality of communication stations (or nodes) 12 that are connected to a shared communications physical media 14. An example of a shared media is the AC powerline wiring grid found in homes, offices and enterprises. In a residential environment, groups of neighboring residences are coupled together via the outdoor wiring, thus forming a huge common media. The signal propagates over a wide area due to mutual inductive coupling which in some cases permits a signal transmitted on one phase to be induced in other phases. Note that the powerline media remains shared until reaching a transformer where signals may not be able to propagate beyond without the use of signal couplers due to poor inductive coupling.

Paragraph beginning on page 3, line 10

Connected - Two stations are considered connected to each other if they are either directly connected or indirectly connected to each other.

Paragraph beginning on page 3, line 25

Another characteristic of power line based networks is that stations on different logical networks may share the same physical network. In many cases, a home, enterprise or other premise includes more than one communication network. Each communication network may be made up of a plurality of stations. All stations of the same network implement the same communication technique and are able to ~~communication~~ communicate with each other thus

permitting interoperability (assuming that the propagation conditions over the media enable communication). Stations from different networks may implement different communications techniques, in which case they are not able to communicate with each other. In addition, the propagation characteristics of the shared media (e.g., the powerline grid) may have large variations and irregularities. This results in large variations in the attenuation over the communication path between two given nodes.

Paragraph beginning on page 5, line 24

It is noted that the main application of the invention is in communications networks, hence the terms stations refers to communication nodes. It is appreciated, however, that stations other than communication nodes may also need to be synchronized. In the communications example presented herein, the shared media is used for both data transmission and for synchronization signal transmission. In non-communication applications (e.g., synchronization of mechanical tools), however, the shared media is used only for the transmission of synchronization signals and not for data.

Paragraph beginning on page 11, line 1

Note that the initial free running rates of both clocks have the same nominal value, and in the ideal case have the same actual value. Practically, however, the actual free running rates of both clocks have some tolerance around [[the]] a nominal value. Note that typical tolerances are in the range of ± 1 ppm to ± 100 ppm depending on quality of the frequency reference source used to generate the clock, e.g., temperature compensated crystal oscillators, ceramic oscillators, etc.

Paragraph beginning on page 15, line 1

As shown in the example in Figure 5, the period of station A is ~~initial~~ initially T_A wherein in response to the transmission by station B, station A adjusts its period to be T_A+2t_n in the next internal clock cycle. The period grows and grows until eventually it diverges to infinity.

Paragraph beginning on page 15, line 4

Thus, it is very difficult at best if not impossible to use a second order tracking loop in a distributed synchronization scenario as described above. Thus, due to this limitation, [[a]] the distributed synchronization mechanism described above must be used with a first-order tracking loop which would reduce its ~~performances~~ performance in some cases.

Paragraph beginning on page 19, line 17

Note also that since <u>the</u> synchronization signal that arrives the earliest in time is used, the value of $t_{received}$ is always less than the time of the expected next tick $t(n)$ of the internal clock. Therefore, it follows that $t_{correction}$ will always be negative or zero and the new expected tick will correspond to a faster rate.

Paragraph beginning on page 20, line 32

Therefore, the term $\lambda^*(T_{nominal}-T)$ is included in Equation 5. The effect of this term is to gradually increase the value of T back to $T_{nominal}$. Preferably, λ is chosen to be considerably smaller than β, so as to [[get]] <u>achieve</u> the desired effect that for all stations other than station A, the term $\lambda^*(T_{nominal}-T)$ will have a minor effect. For station A, however, including this term causes the period T to increase to $T_{nominal}$. As an example, β may be set to a value of 0.1 and λ to a value of 0.01.

Paragraph beginning on page 21, line 5

Once the rate adjustment is complete, the ~~give state~~ <u>given station</u> enters the Active state 48 which is the desired goal of the distributed synchronization mechanism. In this state the given station is fully synchronized to the fastest station in its maximum connected group. In this and only this state, the station transmits synchronization signals. In addition, while in this state, the given station periodically updates both its internal clock phase and internal clock rate in the same manner rate as in the Rate Acquisition state described supra.

Paragraph beginning on page 22, line 1

One consideration for implementing a system based on the principles of the present <u>invention</u> is that in the example presented above, the reception time window is set between t-$T/2$ and t. The reason for this time window is that in situations where station A receives the synchronization signals of station B before t-$T/2$, station B will subsequently receive the synchronization signals from station A within the range t-$T/2$ to t, and consequently will align its clock to that of station A. It may happen, however, that the above situation is not decisive in that a signal is received exactly at time t-$T/2$ (the term exactly meaning up to the tolerance of the variables). In this case, it is not clear whether station A should align its clock to station B, or vice versa.